End of topic check list for CELLULAR STRUCTURE & ORGANISATION

Tick as appropriate:

RED: I do not know about this

AMBER: I have heard about this but have not learned this yet. I am unsure on this.

GREEN: I have heard about this and I have learned this. I am confident about this.

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| Topic | RED | AMBER | GREEN |
| 1. The cytoplasm of eukaryotic cells is organised by membranous structures e.g. Golgi body/apparatus, nuclear envelope, endoplasmic reticulum, lysosomes, mitochondria, chloroplasts, and the membranes of these structures may be referred to as internal cell membranes. |  |  |  |
| 1. Internal cell membranes are important in providing a transport system, separating areas from the rest of the cytoplasm, providing a large surface area for the attachment of enzymes and other reactants, ATP synthesis. |  |  |  |
| 1. You should be able to recognise on a diagram or electron micrograph, and draw on a generalised diagram of a cell, the above organelles and ribosomes, understanding their relative size. |  |  |  |
| 1. Mitochondria consist of an outer and inner double membrane; inter-membrane space; cristae; matrix; DNA and ribosomes. Their function is energy production (ATP). |  |  |  |
| 1. The endoplasmic reticulum(ER) forms an extensive membrane system of flattened sacs, cisternae, continuous with the nuclear membrane and may link to Golgi body. ER may be smooth, without ribosomes and function in lipid and steroid synthesis or rough, with associated ribosomes and function in protein synthesis as a transport system. |  |  |  |
| 1. Ribosomes consist of two subunits, large and small, made of ribosomal RNA and protein. They may be free in the cytoplasm or bound to ER and function in protein synthesis. |  |  |  |
| 1. The Golgi body/apparatus is a series of dynamic, flattened sacs which function in packaging proteins for secretion by the coalescence of vesicles at one end and budding off at the other. |  |  |  |
| 1. Lysosomes are secretory vesicles, from the Golgi body, containing enzymes used in phagocytosis. |  |  |  |
| 1. Centrioles are used in spindle formation during cell division. |  |  |  |
| 1. Chloroplasts consist of a double outer membrane containing stroma with ribosomes, lipid, circular DNA and possibly starch. Through the stroma are parallel flattened sacs, thylakoids, stacked in places as grana, which are the site of photosynthetic pigments. Between the grana the thylakoids form lamellae. Chloroplasts, along with mitochondria are self-replicating. |  |  |  |
| 1. Vacuoles are small vesicles in animal cells and are large and surrounded by a tonoplast in plant calls. Plant cell vacuoles function as storage sites whilst animal cell vacuoles may be formed during phagocytosis or act as contractile vacuoles. |  |  |  |
| 1. The nucleus is bounded by a double membrane the nuclear envelope, with pores to allow transport of messenger RNA (mRNA) and nucleotides. It contains chromatin, extended loosely coiled chromosomes of DNA and histone protein, and the nucleolus where ribosomal RNA (rRNA) is produced. |  |  |  |
| 1. Both plant and animal cells possess: plasma/cell surface membrane, membrane bound nucleus, nucleolus, chromatin, mitochondria, rough and smooth ER, ribosomes, Golgi body/apparatus. |  |  |  |
| 1. Only plant cells possess: chloroplasts, cell wall and plasmodesmata, large vacuole and tonoplast. |  |  |  |
| 1. Cells with distinct membranous organelles are eukaryotic those without are prokaryotic. |  |  |  |
| 1. Prokaryotic cells have no membrane bound organelles or structures such as nuclear membrane or ER. DNA is circular and lies free in the cytoplasm and ribosomes are smaller than those in eukaryotes. |  |  |  |
| 1. The prokaryotic cell wall is not made of cellulose; the site of respiration is in-folding of the cell membrane, the mesosomes. A protective outer layer, the capsule, may be present, as well as small circular structures of DNA, the plasmids. |  |  |  |
| 1. Viruses consist of DNA or RNA, not both, enclosed in a protein coat. |  |  |  |
| 1. In multicellular organisms cells are specialised according to the functions they perform leading to division of labour. |  |  |  |
| 1. An aggregation of similar cells carrying out the same function is a tissue. Epithelia (cuboidal, ciliated), muscle (striated, smooth) and connective tissue (collagen) should be studied in relation to their functions. |  |  |  |
| 1. An organ is an aggregation of several tissues to carry out a particular function for the whole organism. |  |  |  |